What is claimed is:

1. A valve timing control system for an internal combustion engine including an EGR device for recirculating exhaust gases from an intake system thereof to an exhaust system thereof, the valve timing control system controlling valve timing by changing a cam phase which is a phase of at least one of an intake cam and an exhaust cam, relative to a crankshaft of the engine,

the valve timing control system comprising:

operating condition-detecting means for detecting operating conditions of the engine;

determination means for determining whether the EGR device is in operation or not;

target cam phase-setting means for setting a target cam phase in dependence on the detected operating conditions of the engine and a result of determination of whether the EGR device is in operation or not; and

control means for providing control such that the cam phase becomes equal to the target cam phase set by said target cam phase-setting means.

2. A valve timing control system as claimed in claim 1, wherein said target cam phase-setting means sets the target cam phase to a predetermined fixed value when said determination means determines that the EGR device is in operation.

3. A valve timing control system as claimed in claim 1, wherein said target cam phase-setting means sets the target cam phase in dependence on the operating conditions of the engine when said determination means determines that the EGR device is

in operation.

4. A valve timing control system as claimed in claim 1, further comprising demanded EGR rate-calculating means for calculating a demanded EGR rate at which exhaust gases should be introduced into the engine, based on the operating conditions of the engine,

wherein when said determination means determines that the EGR device is in operation, and when the calculated demanded EGR rate is equal to or higher than a predetermined rate, said target cam phase-setting means sets the target cam phase in a direction of increasing a valve overlap between the intake valve and the exhaust valve.

5. A valve timing control system as claimed in claim 4, wherein when said determination means determines that the EGR device is in operation, and when the demanded EGR rate is equal to or higher than the predetermined rate, said target cam phase-setting means sets the target cam phase such that as the demanded EGR rate is higher, the degree of the valve overlap between the intake valve and the exhaust valve becomes larger.